

We Claim:

1. An inflator for a motor vehicle comprising:
an upper housing attached to a lower housing forming an exterior surface for the inflator,
a primary chamber having ignitable gas generant for producing inflation gas,
a secondary chamber having ignitable gas generant for producing inflation gas, and
a divider plate for isolating the primary chamber from the secondary chamber, wherein the primary chamber is a space surrounded by the upper housing, a first filter and the divider plate, wherein the secondary chamber is a space surrounded by the lower housing, a second filter, and the divider plate, wherein the divider plate has a first hole for receiving the first igniter and having a second hole for receiving the second igniter, wherein the divider plate extends substantially across an inner diameter of the lower housing,
wherein the divider plate is movable during operation of the inflator whereby the divider plate is displaced toward the primary chamber when the internal pressure of the secondary chamber is greater than the primary chamber.
2. The inflator according to claim 1 wherein a bottom rim of the divider plate has a surface complimentary to an inner surface of the lower housing.
3. The inflator according to claim 1 further comprising welds curls formed from the welding of the upper housing to the lower housing, the weld curls restrict the movement of the divider plate in the direction of the primary chamber.

4. The inflator according to claim 2 wherein the bottom rim of the divider plate contacts the inner surface of the lower housing before the inflator is actuated.

5. The inflator according to claim 1 further comprising an enhancer donut for igniting the gas generant in the secondary chamber, the enhancer donut receives the second igniter whereby firing of the second igniter ignites the enhancer donut.

6. The inflator according to claim 1 further comprising a disk having a plurality of holes therethrough, the disk separates the gas generant in the primary chamber from enhancer pellets.

7. The inflator according to claim 1 wherein the upper housing has a plurality of exit ports arranged around the circumference thereof for inflation gas to exit the inflator.

8. The inflator according to claim 1 wherein the first filter provides filtering of the inflation gas from burning of the gas generant in the primary chamber, the second filter provides filtering of the inflation gas from burning of the gas generant in the secondary chamber, wherein the first filter and the second filter are coaxial.

9. The inflator according to claim 1 wherein the divider plate has an annular wall, the annular wall has a plurality of grooves that allow inflation gas from the secondary chamber to flow around the divider plate to exit the inflator.

10. An inflator for a motor vehicle comprising:
an upper housing attached to a lower housing forming an exterior surface for the inflator,

a primary chamber having ignitable gas generant for producing inflation gas,

a secondary chamber having ignitable gas generant for producing inflation gas, and

a divider plate for isolating the primary chamber from the secondary chamber, wherein the primary chamber is a space surrounded by the upper housing, a first filter and the divider plate, wherein the secondary chamber is a space surrounded by the lower housing, a second filter, and the divider plate, wherein the divider plate has a first hole for receiving the first igniter and having a second hole for receiving the second igniter, wherein the divider plate extends substantially across an inner diameter of the lower housing,

wherein the divider plate has an annular wall, the annular wall comprises a first flared surface, a contoured surface, and a second flared surface, wherein the first flared surface extends from the divider plate, the contour surface is arranged between the first flared portion and the second flared portion, wherein a plurality of grooves are carved into first flared surface, the contoured surface, and the second flared surface in a manner that allows inflation gas from the secondary chamber to flow around the divider plate to exit the inflator.

11. The inflator according to claim 10 wherein a bottom rim of the divider plate has a surface complimentary to an inner surface of the lower housing.

12. The inflator according to claim 10 further comprising welds curls formed from the welding of the upper housing to the lower housing, the weld curls restrict the movement of the divider plate in the direction of the primary chamber.

13. The inflator according to claim 11 wherein the bottom rim of the divider plate contacts the inner surface of the lower housing before the inflator is actuated.

14. The inflator according to claim 10 further comprising an enhancer donut for igniting the gas generant in the secondary chamber, the enhancer donut receives the second igniter whereby firing of the second igniter ignites the enhancer donut.

15. The inflator according to claim 10 further comprising a disk having a plurality of holes therethrough, the disk separates the gas generant in the primary chamber from enhancer pellets.

16. The inflator according to claim 10 wherein the upper housing has a plurality of exit ports arranged around the circumference thereof for inflation gas to exit the inflator.

17. The inflator according to claim 10 wherein the first filter provides filtering of the inflation gas from burning of the gas generant in the primary chamber, the second filter provides filtering of the inflation gas from burning of the gas generant in the secondary chamber, wherein the first filter and the second filter are coaxial.

18. The inflator according to claim 10 wherein the grooves of the annular wall extend only partway along the second flared surface, the grooves are arranged in a radiating direction, whereby the divider plate being movable during operation of the inflator whereby the divider plate is displaced toward the primary chamber when the internal pressure of the secondary chamber is greater than the primary chamber.